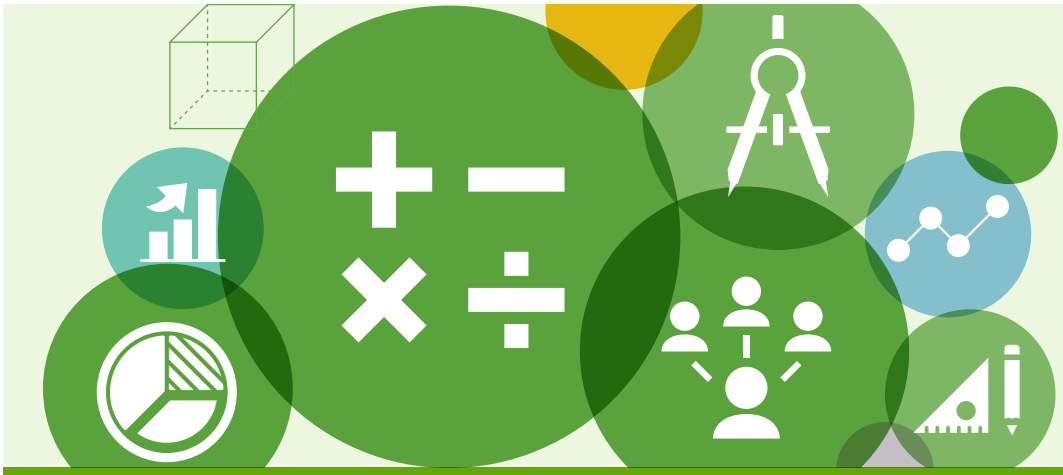

STUDENT VERSION

INTERPRETING BOX PLOTS – DATA ON CAMPING AND BACKPACKING GOODS

Activity Item

The following item is part of this activity and appears at the end of this student version.

- Item 1: Group A and Group B Data Strips

Student Learning Objectives

- I will be able to create and interpret a box plot of census data.
- I will be able to display numerical data on a number line.
- I will be able to identify measures of center (median) and variability (interquartile range).

NAME:_____ DATE:_____

1. Follow these steps to help you fill in the blanks for the 5-number summary and to create a box plot, adding a title and horizontal axis label, of the data in **Item 1: Group A and Group B Data Strips**:

   Fold a strip in half to find the median. Then fold it in half again to find the lower quartile (Q_1) and upper quartile (Q_3). If these folds are ever between two numbers, average those two numbers to calculate the value you need, rounding to one decimal place.

   Group A (excludes California)

   Minimum = _____ Q_1 = _____Median = _____ Q_3 = _____ Maximum = _____

Group B (includes California)

Minimum = _____ Q_1 = _____ Median = _____ Q_3 = _____ Maximum = _____

2. Why must the data be in numerical order before you start folding your paper to find the 5-number summary?

3. Which quarters of the data sets have the most states?
   - **Group A:**
   - **Group B:**

4. Calculate the range for each quarter by filling in the following table (showing your work).

Quarter and Its Range Formula	Group A	Group B
First (lowest) = Q_1 - minimum		
Second = median - Q_1		
Third = Q_3 - median		
Fourth (highest) = maximum - Q_3		

5. The interquartile range (IQR) is the difference between Q_3 and Q_1. Find the IQR for both data sets (showing your work):
   - **Group A:**
   - **Group B:**

6. Three things to examine in a data distribution are center, shape, and spread. Look at your box plot to describe those three characteristics for both sets of data in the following table.

Characteristic	Group A	Group B
Center – most of the data are centered at:		
Shape – the quarter where the data values are more spread out is:		
Spread (show your work) – the range of the data is:		

7. The data point for California is considered an outlier in this data set. Why do you think that is?

8. Describe the main differences between the box plots for Groups A and B.

9. When looking at a data distribution, it is helpful to know what pieces of the data set you can see. Which of the following values and measures does a box plot show? (Check all that apply.)

   _____ the minimum

   _____ the mean

   _____ the maximum

   _____ the seventh data point

   _____ the median

   _____ the mode

10. Now apply what you've learned to interpret the distribution of a new data set. Calculate the 5-number summary and make a box plot for these values: 4, 7, 16, 23, 27.

    Minimum = _____ Q_1 = _____ Median = _____ Q_3 = _____ Maximum = _____

11. Use what you found in question 10 to interpret the distribution of the data set.

Item 1: Group A and Group B Data Strips

Number of Discount Department Stores Selling Camping and Backpacking Equipment in 2007 for Each U.S. State (from least to greatest)

Group A (excludes California)

State	Number of Discount Stores
Alaska	6
Vermont	6
Delaware	10
Rhode Island	11
Wyoming	11
North Dakota	12
Hawaii	15
West Virginia	18
Mississippi	19
South Dakota	19
Maine	21
Idaho	25
Montana	25
Louisiana	26
Nevada	26
New Mexico	27
Nebraska	28
Arkansas	29
Kansas	32
New Hampshire	33
Oklahoma	33
Utah	39
Alabama	46
Colorado	48
Oregon	48
Connecticut	51
Iowa	52
Kentucky	54
South Carolina	54
Tennessee	60
Arizona	69
Indiana	80
Georgia	81
Washington	81
Maryland	83
Missouri	85
Massachusetts	87
Virginia	97
North Carolina	107
Minnesota	114
New Jersey	117
Wisconsin	133
New York	156
Michigan	158
Ohio	158
Texas	163
Pennsylvania	176
Illinois	207
Florida	229

Group B (includes California)

State	Number of Discount Stores
Alaska	6
Vermont	6
Delaware	10
Rhode Island	11
Wyoming	11
North Dakota	12
Hawaii	15
West Virginia	18
Mississippi	19
South Dakota	19
Maine	21
Idaho	25
Montana	25
Louisiana	26
Nevada	26
New Mexico	27
Nebraska	28
Arkansas	29
Kansas	32
New Hampshire	33
Oklahoma	33
Utah	39
Alabama	46
Colorado	48
Oregon	48
Connecticut	51
Iowa	52
Kentucky	54
South Carolina	54
Tennessee	60
Arizona	69
Indiana	80
Georgia	81
Washington	81
Maryland	83
Missouri	85
Massachusetts	87
Virginia	97
North Carolina	107
Minnesota	114
New Jersey	117
Wisconsin	133
New York	156
Michigan	158
Ohio	158
Texas	163
Pennsylvania	176
Illinois	207
Florida	229
California	470

Source: 2007 Economic Census